

## CLAIMS

1. An antimicrobial comprising a derivative of poly(2-propenal, 2-propenoic acid) formed by reaction between a poly(2-propenal, 2-propenoic acid) and an organic compound containing hydroxyl one or more groups to form protected carbonyl groups.
2. An antimicrobial according to claim 1 wherein the derivative comprises a multiplicity of protected carbonyl groups selected from at least one of hemiacetal groups and acetal groups.
3. An antimicrobial according to claim 2 wherein the protected carbonyl groups include acetal groups.
4. An antimicrobial according to claim 1 wherein the alcohol is selected from alkanols, phenols, polyols and mixtures thereof.
5. An antimicrobial according to claim 4 wherein the alcohol is selected from at least one polyol.
6. An antimicrobial composition according to claim 5 wherein the polyol comprises a polyalkylene glycol.
7. An antimicrobial according to claim 5 wherein the polyol comprises a polyethylene glycol.
8. An antimicrobial according to claim 5 wherein the polyol is a polyethylene glycol of molecular weight of from 200 to 2000.
9. An antimicrobial according to claim 5 wherein the polyol is a polyethylene glycol of molecular weight in the range of from 200 to 1000.

10. An antimicrobial for treating or preventing gastrointestinal disease in animals by gastrointestinal administration said antimicrobial composition comprising the antimicrobial of claim 1 and a pharmaceutically or veterinarily acceptable inert carrier for gastrointestinal administration to animals.
11. An antimicrobial for treating or preventing gastrointestinal disease according to claim 10 wherein the carrier for gastrointestinal administration is selected from the group consisting of controlled release polymers, olive oil, peanut oil, sesame oil, sunflower oil, arachis oil, coconut oil, liquid paraffin, ethylene glycol, propylene glycol, polyethylene glycol, ethanol, propanol, isopropanol, glycerol, fatty alcohols, triglycerides, polyvinyl alcohol, partially hydrolysed polyvinylacetate and mixtures thereof.
12. An antimicrobial composition according to claim 10 in the form of a feed additive or drinking water additive comprising from 0.1 to 70% by weight of the antimicrobial.
13. An animal feed or drinking water composition comprising a feed material or water and an antimicrobially effective amount of an antimicrobial according to claim 1.
14. An animal feed composition according to claim 13 wherein antimicrobial is present in an amount of from 0.001 to 25% by weight of the total feed or water composition.
15. A drinking water composition for use by animals containing in the range of from 0.0001 to 10% by weight of the antimicrobial of claim 1.
16. An antimicrobial composition comprising an antimicrobial according to claim 1 and a further active agent selected from the group consisting of antimicrobials and chemotherapeutic agents.

17. An antimicrobial composition comprising an antimicrobial according to claim 1 and adsorbed thereon a further active agent selected from the group consisting of antimicrobials, chemotherapeutics and sunscreens, wherein the further active agent includes one or more groups selected from the group consisting of phenyl compounds, aromatic compounds, alkyl compounds and amphipathic compounds.
18. An antiseptic or preservative composition comprising an antimicrobial according to claim 1 and at least one further antimicrobial substance.
19. An antiseptic or preservative according to claim 18 wherein the further antimicrobial substance is selected from the group consisting of EDTA, lower alkanol, a phenol, an isothiazolinones, glutaraldehyde and alkylparaben.
20. An antiseptic or preservative according to claim 18 wherein the further antimicrobial substance is selected from the group consisting of lower alkanol, orthophenyl phenol, chloroxylonol and lower alkyl paraben.
21. A composition according to claim 18 wherein the further antimicrobial comprising (on a weight basis of the composition) at least one of
- (a) a phenol in an amount of from 0.1 to 10%;
  - (b) an isothiazolinone in an amount of 0.001 to 1%;
  - (c) alkyl parabens in an amount of 0.02 to 2% and
  - (d) lower alkanol in an amount of from 20 to 99.9%.
22. A composition according to claim 21 wherein the further antimicrobial substance is selected from the group consisting of the phenols chloroxylonol and orthophenylphenol and the isothiazolinone, 2-n-alkyl-4-isothiazoline-3-one.

23. An antiseptic composition for application to skin comprising an antimicrobial according to claim 1 and an emulsion composition comprising an oil phase, an aqueous phase and an emulsifier.
- 5 24. A method for treatment or prophylaxis of gastrointestinal disease in an animal comprising gastrointestinal administration to the animal of an antimicrobial effective amount of an antimicrobial according to claim 1.
- 10 25. A method according to claim 24 wherein the antimicrobial is orally administered.
- 15 26. A method according to claim 24 wherein the animal is suffering from at least one gastrointestinal disease selected from the group consisting of gastroenteritis, ulcer, diarrhoea and gastrointestinal cancer and dysentery insufficient weight gain.
- 20 27. A method according to claim 25 wherein the animal is suffering from at least one of diarrhoea, gastroenteritis and dysentery.
- 25 28. A method according to claim 24 wherein the animal is selected from the group consisting of dogs, pigs, sheep, horses, cattle, cats, poultry, ducks, turkeys and quail.
- 30 29. A method according to claim 24 wherein the animal is selected from ruminant animals and the antimicrobial is rectally administered.
- 30 30. A method according to claim 24 wherein the animal is selected from poultry and pigs.
31. A method according to claim 30 wherein the animal is a partially grown pig.

32. A method for treatment or prophylaxis of porcine post weaning colibacillosis comprising orally administering to young pigs after weaning, an antimicrobially effective amount of the antimicrobial of claim 1.

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33. A method according to claim 24 wherein the antimicrobial of claim 1 is administered at a dose of from 0.05 to 5000 mg/kg/day.

34. A method according to claim 24 wherein the antimicrobial of claim 1 is administered at a dose in the range of from 0.5 to 500 mg/kg/day.

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35. A method according to claim 32 wherein the young pigs are administered a dose of the antimicrobial in the range of from 0.05 to 50 mg/kg/day.

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36. A method according to claim 24 wherein the gastrointestinal disease results from one or more microbes selected from the group consisting of Coliforms, Salmonella, P.aeruginosa, Helicobacter species, Proteus, Enterobacteria, Yeasts, Protozoa, Clostridia and Shigella.

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37. A method according to claim 24 wherein the gastrointestinal disease results from one or more of *H. Pylori* and coccidia.

38. A method according to claim 24 wherein the gastrointestinal disease results from at least one of enterotoxigenic *E. coli* and  $\beta$ -haemolytic *E. coli*.

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39. A method of treatment or prevention of necrotic enteritis in poultry comprising administering to poultry an effective amount of the antimicrobial of claim 1.

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40. A method according to claim 24 wherein the antimicrobial is administered in combination with a further chemotherapeutic

adsorbed thereon to thereby reduce membrane penetration of the further chemotherapeutic.

41. A method according to claim 40 wherein the further chemotherapeutic is selected from antibiotics and anticancer agents.

42. A method of treatment or prevention of coccidiosis in poultry comprising administering to poultry an antimicrobially effective amount of antimicrobial of claim 1.

43. A sunscreen composition comprising an active agent selected from the group consisting of aminobenzoates, salicylates, benzophenone, anthasilates, dibenzoylmethanes, camphor derivatives, cinnamates, titanium dioxide and zinc oxide and an antimicrobial according to claim 1.